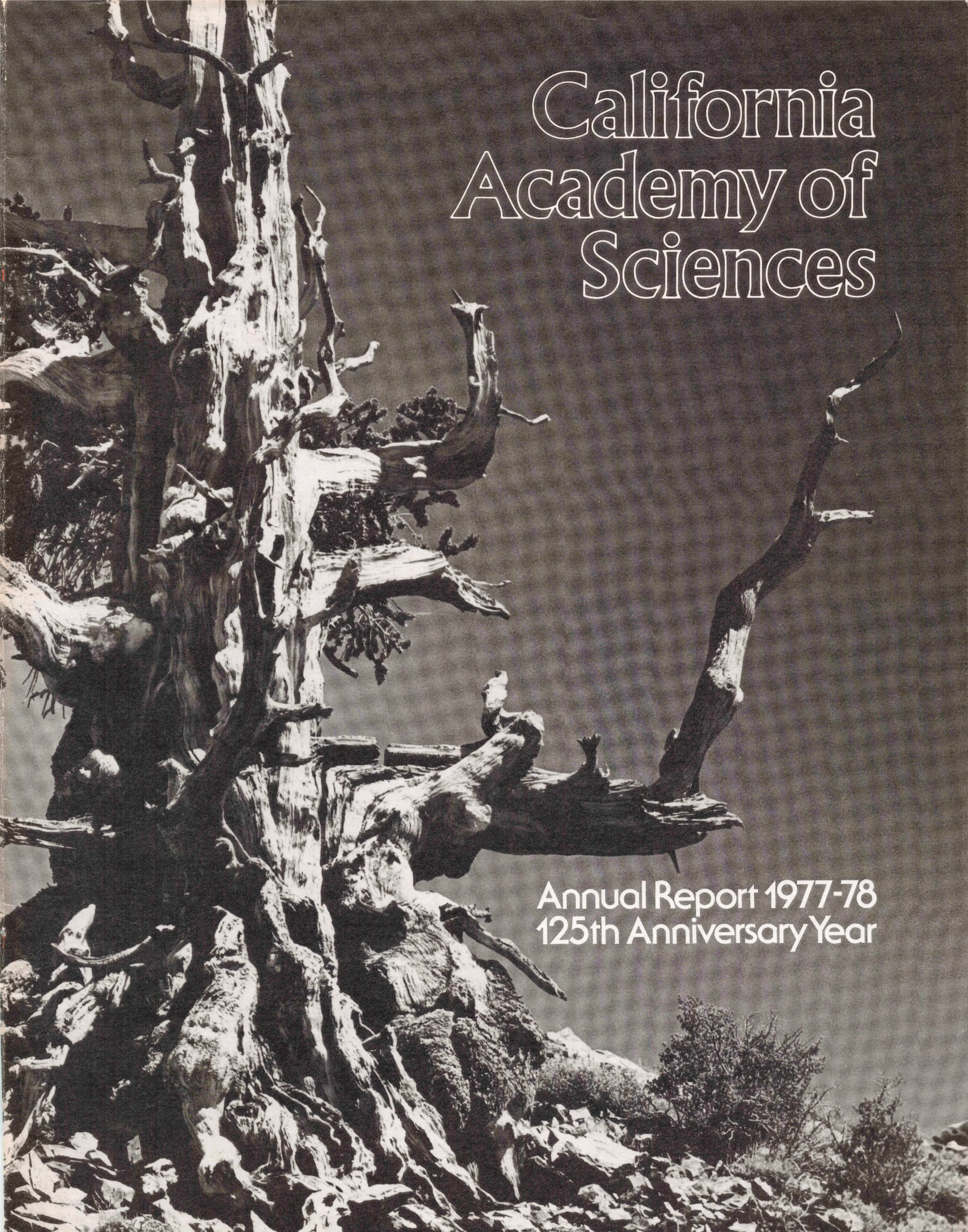
California Academy of Sciences



Annual Report 1977-78
125th Anniversary Year

CALIFORNIA ACADEMY OF SCIENCES

GOLDEN GATE PARK, SAN FRANCISCO, CALIFORNIA 94118

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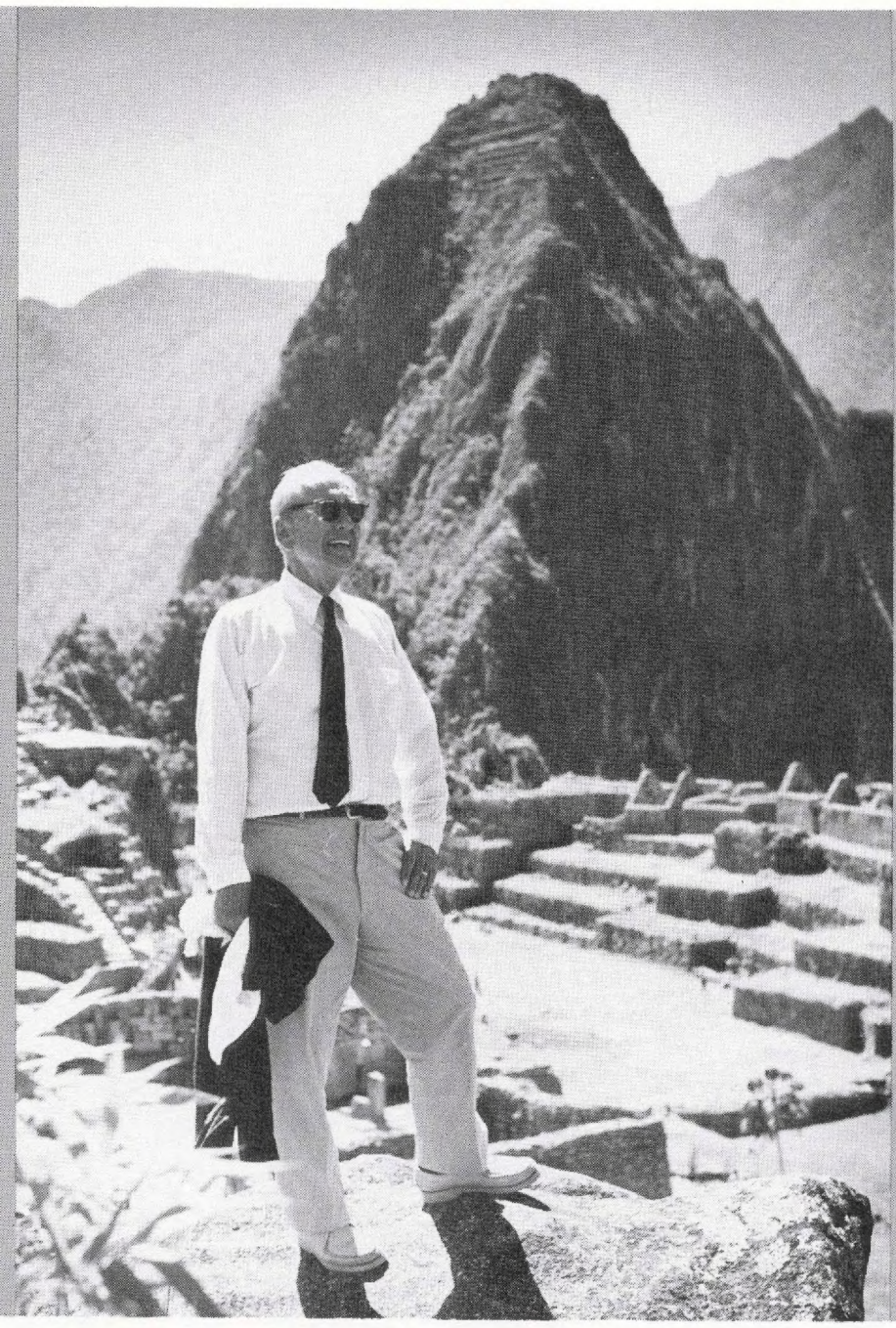
July 4, 1904–February 4, 1978



A MESSAGE FROM THE CHAIRMAN

The 1977-78 year was a most rewarding one for the Academy; attendance increased 12.4% over the prior year and membership, measured at year end, was up by more than 9% although no major campaign to gain new members was conducted. In large part there can be no doubt that these encouraging figures are the result of the first full year of operation of the Fish Roundabout and the second of the Wattis Hall of Man.

We also sustained major losses during the year. Mr. Kenneth K. Bechtel, Benefactor, Fellow and a Trustee since 1951; Dr. Ian Campbell, a Trustee from 1960 to 1976 and the Academy's President from 1971 to 1976; and Mr. I. W. Hellman, a Trustee from 1963 to 1973 and the individual most responsible for the addition of Cowell Hall, all died in February 1978. While these men are sorely missed, it is a tribute to them and their efforts that this year—during which the Academy celebrated its 125th anniversary—finds the institution stronger than ever.

We dedicate this annual report to Mr. Bechtel. He was a unique individual—conservationist and businessman, scientist and innovator, immensely generous but insistent upon anonymity, soft-spoken and ever considerate of others yet his loyalty and dedication to the Academy were forged of iron. Probably no member of our Board will ever be as involved with as many different aspects of the Academy's interests and activities as was Ken.

Among the major events of the past year were:

The exhibition of "Peru's Golden Treasures" (which opened June 15, 1978); this major collection of artifacts of Peru's ancient peoples is from the Museo Oro del Peru, Lima, given them by Miguel Mujica Gallo. It has been on display in the United States since early in the year—at the American Museum of Natural History in New York, the Field Museum of Natural History in Chicago, the Academy, and in September 1978 will move to the Detroit Art Institute. Presentation of this major exhibition was underwritten to a substantial extent by Bank of America NT & SA and Chevron U.S.A. Inc., and we are most grateful to these organizations for their sponsorship.

"Art of the First Australians" was shown in the Atholl McBean and Patricia Price Peterson Galleries from November 1977 until April 1978. This exhibit displayed Aboriginal paintings, sculpture and artifacts of the past two hundred years and was sponsored by the Australian Exhibit Organization.

Dr. Kenneth Norris, Professor of Natural History of the University of California at Santa Cruz, was the medalist and well-received speaker at the Fellows' Dinner on October 5, 1977.

William J. ("Jerry") Hume succeeded E. Morris Cox as a member of the Board of Trustees, and Mr. Cox, who served so ably as the Academy's chairman 1967 to 1973, became an Honorary Trustee.

Nancy Behr Dykes became business manager of the Academy during October 1977. Christian Beattie resigned as assistant director to accept another position.

"California Quail"—a study of the habits and habitat of that unique bird—was published by the University of California Press, the result of a multi-year study by Trustee Dr. A. Starker Leopold, under a grant to the Academy from the Atholl McBean Foundation.

We are pleased to report that our 1977-1978 operating deficit was more than offset by income from restricted endowments.

As we enter our 1978-1979 year we confront major challenges, but we do so with confidence. Support from the City and County of San Francisco— mandated under its charter as a result of voters' acceptance in 1916 of the bequest which produced Steinhart Aquarium—will be markedly reduced. This is a consequence of the City's expenditures review which followed passage by the California electorate in the June general election of a property tax ceiling. The Academy, with the approval of the Board of Supervisors, has raised its admissions charges effective July 2, 1978, in an effort partially to offset the diminished City support.

Under the able direction of Dr. George Lindsay—whose report follows—the Academy's highly professional staff and its dedicated docents and volunteers made 1977-78 a banner year. The Board of Trustees here acknowledges its gratitude to these individuals and to our members, corporate and foundation doners, Friends, Benefactors and the City and County of San Francisco. All, working together, provide a strength which exceeds that of the individual components.

Paul L. Davies, Jr.

Paul L. Davies, Jr.
Chairman, Board of Trustees

REPORT OF THE DIRECTOR

Visitors who saw the attractions of Steinhart Aquarium, Morrison Planetarium, and the museum halls and galleries of the California Academy of Sciences totaled 1,718,827 during this, its 125th year. It was a substantial increase over the 1,529,680 of 1976-1977. The San Francisco Convention and Visitor's Bureau presented a 1978 Silver Cable Car Award in recognition of the institution's importance as a cultural attraction. The Academy's role as a research resource of the scientific community was recognized by its support from the National Science Foundation, National Endowment for the Arts, National Oceanic and Atmospheric Administration, and other agencies and foundations.

The Academy's mission is a mix of research and education in the natural and environmental sciences. People come to it for recreation, diversion, and instruction. Others are attracted by its research collections and activities. The following few pages are a report of public and scientific events and accomplishments of the 1977-1978 fiscal year.

PUBLIC ACTIVITIES

STEINHART AQUARIUM

John E. McCosker, Director. After the opening of the Fish Roundabout in June 1977 the Aquarium staff concentrated on the renovation and improvement of the older aquarium exhibits. A major one was the reglazing and resurfacing of the dolphin and seal tank, with support of a substantial grant from Mr. and Mrs. Harry Johnston and additional funds from the Title II Federal Economic Development Act. The entrance to the Aquarium was repainted and improved, and new aquatic exhibits were created, including a reef shark tank, a giant clam display, and special facilities for living nautiluses. The Aquarium was joined by the Society for the Protection of Old Fishes, known to some ichthyologists as SPOOF, in the opening of the Breeden Coelacanth display in Fossil Hall, adjacent to the Roundabout. A commercial energy assessment and conservation study of the Aquarium and other Academy buildings was completed.

Among many distinguished visitors was HRH Prince Charles who with director McCosker joined Mr. and Mrs. Jeffery Meyer aboard their *F/V Grunt* for a successful shark collecting trip.

Staff members collected specimens

for ongoing and new displays, and exchange with other aquariums. Walter Schneebeli made 79 collections which totaled more than 20,000 plant and animal specimens. Curator David Powell went to Canton Island in the South Pacific. A generous benefactor sponsored a mini-expedition to Oahu, Maui and Hawaii for six of the Aquarium's junior volunteers, under the direction of Aquatic Biologist Tom Tucker. Edwin Janss, Jr. supported an expedition to the Tongue of the Ocean, an abyss in the Great Bahama Bank, and Steinhart Divers collected at San Salvador Island, resulting in our first displays of many important Caribbean species. Dr. McCosker organized a joint expedition with Scripps Institution of Oceanography and the University of California at Los Angeles to Grand Cayman Island, to study and capture the bioluminescent Forgotten Flashlight Fish, previously known from a single, but lost, specimen. Dr. Leighton Taylor of the Waikiki Aquarium shared with Steinhart living specimens of Chambered Nautilus, captured in Palau by Mr. Nixon Griffis.

The Aquarium continued its role as an educational facility by conducting original research; supplying research specimens and facilities for other investigators; and providing instructors for courses for university students, Junior Academy members, and amateur fish-watchers and aquarium keepers.

As required by the original bequest Steinhart Aquarium receives substantial support from the City of San Francisco. There was generous supplemental support from many friends and benefactors which made possible most of the improvements accomplished during the year. Among the individuals and organizations who supported the Aquarium were Mrs. Wilson Meyer, the G. H. C. Meyer Family Foundation, Mr. and Mrs. Jeffery Meyer, the Janss Foundation, Mr. Edwin Janss, Jr., the Charline H. Breeden Foundation, Mr. Vic Breeden, Mr. and Mrs. Foster Bam, Mrs. Marriner Eccles, Mr. Ernest Vollmer, Jr., Mr. and Mrs. Gordon T. Lisser, Mrs. Russell Matthias, the Steinhart Divers, United Airlines, and many other individuals who donated specimens, assistance and support.

MORRISON PLANETARIUM

Lee W. Simon, Director. The Planetarium was closed seven weeks during September and October for a complete overhaul of the Morrison projector and installation of carpeting and comfortable new reclined seats in the theater. The seating capacity is now 318 persons.

Fewer performances were presented because of the renovation, but the average attendance of the regular and student planetarium shows increased.

There were 725 presentations of five conventional planetarium programs which 121,548 people saw, 102 special student shows attended by 25,946, and 505 Laserium performances before audiences totaling 115,762 persons. "Exploring the Skies of the Season," which was offered only on Saturday and Sunday mornings was attended by 7,719 people. Total admissions to Morrison Planetarium were 282,666.

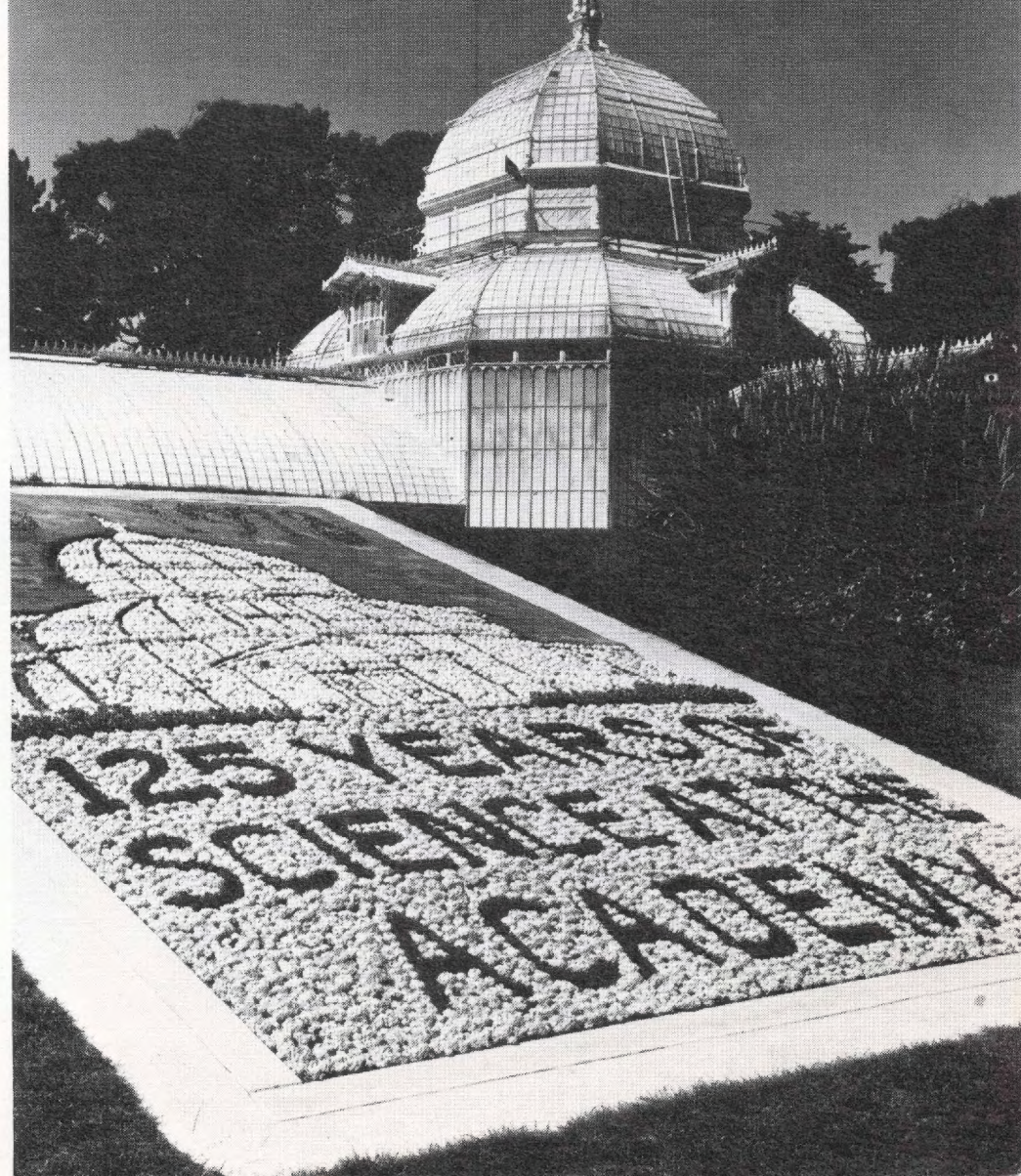
EXHIBITS DEPARTMENT

Robert Bjorkland, Chairman. "Peru's Golden Treasures," which opened June 15, 1978, was the most important temporary exhibition yet presented by the Academy. A spectacular collection of pre-Columbian gold artifacts assembled by Mr. Miguel Mujica Gallo, Founder and Director General of the Museo Oro del Peru, was organized for showing in the United States by the American Museum of Natural History. The Bank of America Foundation and Chevron U.S.A. were its sponsors.

Two ancillary exhibitions augmented the golden treasures. "Peruvian Textiles: A Weaver's Art" included superb ancient pieces from the Academy's Carl Rietz Collection and occupied the Patricia Price Peterson Gallery. "Peru's Natural Heritage" featured priceless Nazca pottery with designs and forms from nature, loaned from the Wattis Collection of Nazca Pottery by the Lowie Museum.

"Art of the First Australians," an exhibition of Aboriginal painting, sculpture and artifacts, filled the Atholl McBean

Left, Academy Director George Lindsay received the San Francisco Convention and Tourist Bureau's Silver Cable Car Award from Paul Handlery. Right, a floral plaque celebrating the Academy's 125th anniversary was the salute of the Recreation and Park Commission and Department.



and Patricia Price Peterson Galleries through the winter. The comprehensive presentation of weapons, utensils, instruments, sculpture and painting was provided by the Australian Exhibit Organization and arranged by the Aboriginal Arts Board of the Australian Council.

"Query and Rubinow," works of sculpture Joseph Query and artist Wiveca Rubinow, was shown during the summer of 1977 in Hohfeld Gallery.

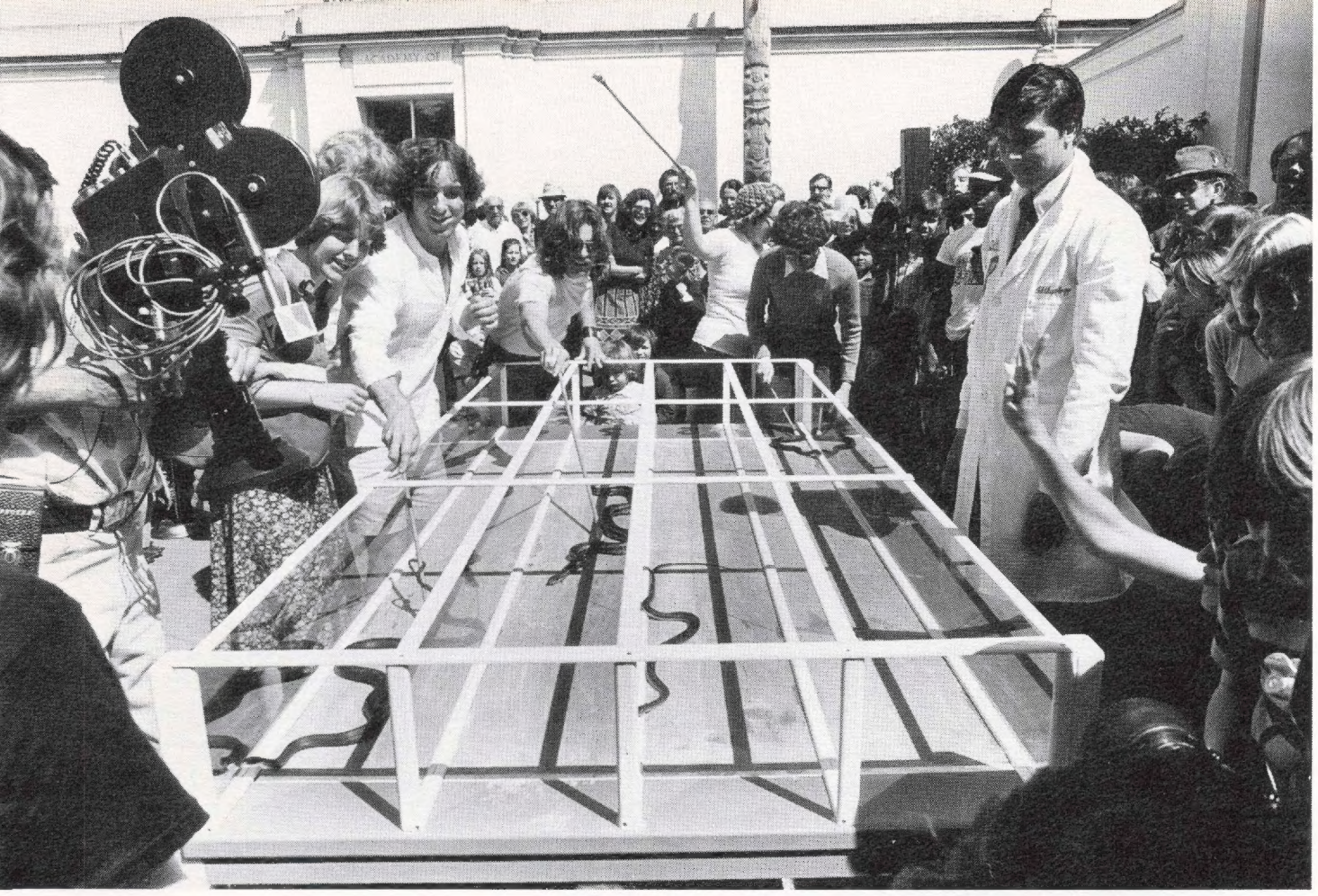
There were twenty-two temporary exhibits during the year. They included J. Fenwick Lansdowne's paintings used to illustrate S. Dillon Ripley's book, "Rails of the World," and "Botanical Prints" by Henry Evans, which also illustrated a sumptuous book with the same title. Several outstanding photographic exhibits included "Unseen Flowers of the Desert," by Robert I. Gilbreath; "Wilderness and Wildlife—The Northern Rocky Mountains" by John Stern; "Fossil X-rays" by Dr. Wilhelm Stuermer; "Wet Belly Photography" by students of Ernest Braun and Marion Patterson; "Indians of Lower California" based on contemporary illustrations of explorer's accounts of now extinct inhabitants of the peninsula, which were assembled by Dr. A. B. Elsasser of the Lowie Museum; "A. C. Vroman: Shadow Catcher," historic Southwest Indian photographs from the Los Angeles County Museum of Natural History; and "Nature Nearby" by Luther Linkhart.

A superb new permanent diorama in the Wattis Hall of Man, "The Navigating Peoples of the Pacific," was opened in October. Sandra McCosker, with support from the Janss Foundation, traveled for several months gathering Micronesian materials for this exhibit, which she developed with the assistance of Designer Dennis Carlson.

Nancy Bronstein was in charge of the nearly completed dioramas of Hopi and Navajo people, assisted by Terence Talaswaima, Director of the Museum of the Hopi Cultural Center, who came to build a pueblo structure, and taxidermist preparator Fred Funk.

Anthropologist Dr. William Torry journeyed to northern Kenya to collect material for a permanent diorama of the nomadic Gabra camel people, while Elayne Zorn had a similar mission in Peru, for an exhibit of the transhumance population of the high Andes.

LIVING ARTS PROGRAM. Sandra McCosker, Coordinator. Artists, craftsmen, musicians, dancers, collectors and lecturers were brought to the Wattis Hall of Man and Morrison Auditorium by the Living Arts Program, which was directed by Sandra McCosker and had matching grant support from the National Endowment for the Arts. During the winter programs were offered each weekend, and in the summer months they were presented during the week. Subjects were related to openings of new exhibit fea-



Some highlights of the year at the Academy: left top, members whale-watched in Baja California; left center, HRH Prince Charles caught sharks for the Fish Roundabout; lower left, Mrs. Joseph Hall, Chairman of the Docent Council, showed students a new exhibit of an old coelacanth; above, Dr. John McCosker was the starter for Steinhart Aquarium's St. Patrick's Day snake race; right, Research Associate Dr. Michael Lagios, assisted by Dr. McCosker, operated on an octopus; below, the solar eclipse of May 3, 1978 was projected by Bing Quock for Sun Day observers.

tures in the Wattis Hall of Man or exhibitions in the galleries, and in some cases to complement anthropological symposia. A comprehensive series about Peru and Andean music, dance, and textiles was developed for the summer of "Peru's Golden Treasures."

JUNIOR ACADEMY. Kenneth E. Lucas, Supervisor. The Junior Academy occupied beautiful new quarters which were completed in June, 1978, just in time for the heavy summer Junior Academy program. The facilities include two large classrooms, a laboratory, two offices for instructors, a live animal room, a library, a student project room and several storage rooms. The improvements were made possible by a Title I Local Public Works grant of $240,800 which also provided new quarters for the Docent Council.

Another new project was a "Discovery Room" developed with funds provided by Janet Nickelsburg, an educator and author of educational books for children. Mrs. Nickelsburg also endowed the room with ongoing royalties from one of her books. The Discovery Room encourages youngsters to explore and "discover" nature. It will also be used as a special resource for handicapped children, with tactilely interesting and educational objects for the blind and visually stimulating materials for the deaf. Some of these were supplied by the Bange Memorial Fund of the San Francisco Aquarium Society. Kerry Mahar visited equivalent facilities in Chicago, New York and Washington before undertaking the development of the Academy's Discovery Room.

Junior Academy membership increased from 460 to 585, and 46 courses were offered. Alan Tway presented after-school programs four days each week, and all were oversubscribed.

DEVELOPMENT AND MEMBERSHIP. Kathleen F. Bowman, Development Officer. There were 10,375 adult memberships on July 1, 1978, a nine percent increase for the year. Most memberships include two or more persons in a family, so there are actually more than twenty thousand Academy members. Marion Ganapol is Membership Coordinator.

About 4,500 members and guests attended the previews of the "Peru's Golden Treasures" exhibit in June, and more than 10,000 attended the monthly members' meeting during the year.

There were 81 "Friends of the Academy," who made annual gifts of at least one thousand dollars. Corporate Donors now number more than 120, as listed in this report.

More than 350 volunteers now give their time to the Academy. Frances Reed serves as Volunteer Coordinator. There were more than 125 docents, and 25 men and women staffed the information desks under the direction of Betsy Arminger.

J. W. MAILLIARD, JR. LIBRARY. Ray Brian, Librarian. The library benefited from increased staff through the CETA program. However, two key staff members were lost through retirement: Assistant Librarian Clara Gross, and volunteer Margaret Campbell, who is a Library Associate, Academy Fellow, and Academy Archivist. Replacements for these able women will be difficult to locate and recruit.

The library subscribed to 378 journals, which cost $13,153, and received publications from 613 other societies through exchange. During the year 294 books and documents were purchased at a cost of $6,148, and 311 volumes were bound at a cost of $2,300.

Branch libraries of specialized literature are maintained in each of the research departments.

PACIFIC DISCOVERY. Bruce Finson, Editor and John Kooy, Art Director. The Academy's natural science magazine, which appears every two months, now has a circulation of more than 12,000 copies. During the year 24 articles were published about the natural history and geology of our planet, and one was about Mars. Dr. Lee W. Simon, Director of Morrison Planetarium, contributes the *Sky Watcher's Guide,* a popular feature about astronomy.

Associate Editors Robert I. Bowman, Robert C. Miller, and Robert T. Orr review manuscripts and assist in the selection of those accepted for publication. George Lindsay is Managing Editor.

PICTURE COLLECTION. Johan Kooy, Chairman. The Picture Collection was created sixteen years ago to organize and centralize the Academy's holdings of photographs, drawings and other graphic materials. The Collection is staffed by volunteers who have, under Mr. Kooy's general supervision, been responsible for the processing of more than one million accessions.

The Picture Collection is also the repository of the Academy's philatelic collection, from which selected stamps are exhibited in the Academy's garden entrance from Middle Drive.

Donations of valuable visual material account for much of this department's remarkable growth. Among significant gifts this year were the Austin Morris Collection of Stamps from Geraldine K. Lindsay, and important sets of natural history photographic transparencies given by Albert Bekker, Mr. and Mrs. J. V. C. Gregory, Dr. and Mrs. Gerald Corsi and other contributors. Financial assistance for the purchase of graphic materials was provided by Helen Peterson.

DOCENT COUNCIL. Mrs. Joseph Hall, Chairman and Diane Butler, Coordinator. The Docent Council and its 145 active members gave nearly 15,000 students interpretive tours within the Academy, and another 3,000 youngsters were contacted when the SUPERVAN visited 52 schools and libraries in the Bay Area. The docents also provided 1800 hours of instruction around the tidepool exhibit in the Fish Roundabout.

Forty-two trainees graduated from a seven-month course of study directed by Dr. Robert T. Orr, and 15 advanced docents completed a 14-week aquarium course conducted by Dr. John McCosker. Eleanor Lawry edited a 280-page book *On Exhibit: a docent guide to the birds and mammals of the California Academy of Sciences.* In addition, the Council published ten issues of the monthly newsletter *TOURisms.*

The docents perform many services for the Academy in addition to their education programs for students. They are official hostesses and hosts at special events and receptions; and they serve as the Academy's ambassadors-at-large to the entire community, generating memberships and support through their enthusiasm. They are an enormous asset for the institution.

In June, 1978 the Docent Council occupied new headquarters with offices on the main floor of the Academy, in close proximity to the Discovery Room, the Livermore Room, Goethe Hall and the educational facilities of the Junior Academy.

EDUCATION OFFICE. The Education-Travel Office is responsible for the Academy's adult education and educational travel programs. Lysbeth Corsi planned the adult courses, local trips, and members' programs until May 31, 1978, when the search for a permanent Director of Education was initiated. That selection had not been made at the year's end.

There were three members' trips to Baja California; one to the lagoons of the west coast to see gray whales; one the length of the Sea of Cortez with Dustin Chivers; and one overland camping trip. Dr. and Mrs. Robert T. Orr led their third Academy members' trip to Australia and New Zealand. An Academy-Lindblad trip to Ecuador and the Galapagos Islands was accompanied by Jacqueline Schonewald, and Charles Chesterman led another group to the Hawaiian Islands. There were many shorter excursions with Mr. and Mrs. Chesterman and Dr. and Mrs. Orr and other leaders. A series of Wednesday bus trips to nearby points of interest was started and was well received.

Among the most generous donations was that of time given by eighteen volunteers who accessioned or loaned out the thousands of pictures which were processed during the year.

PUBLIC INFORMATION. Pam Wing, Information Officer. The changing exhibits and other features of a very active year provided opportunities for Pam Wing to acquaint many new media people with the Academy's attractions.

There were several first time special events, including a birthday party for Morrison Planetarium's 25th year, a solar eclipse workshop and theater, and Steinhart Aquarium's St. Patrick's Day Snake Race in March. In June the Whale Fountain Courtyard was the scene of the Academy's 125th anniversary celebration, on a day set aside by the Mayor as "California Academy of Sciences Day."

Steinhart Aquarium contributed to press interest with shark fishing capers involving Prince Charles, deadly sea snake arrivals, Dr. McCosker's hunt for the "Forgotten Flashlight Fish," and other newsworthy activities.

Pam Wing writes the monthly *Newsletter* for the Academy's members, provides public information to all who are interested, and publicizes the usual as well as some of the unusual events.

Staff Photographer Lloyd E. Ullberg records happenings on film, for news release, the *Newsletter, Pacific Discovery,* this *Annual Report,* and for the Exhibits Department.

INSTRUMENT SHOP. Steven B. Craig, Superintendent of the Instrument Shop, was appointed Operations Manager of the Academy's physical plant in 1977. With this he becomes responsible for the Security and Custodial personnel, as well as the maintenance of the buildings and equipment. The Instrument Shop manufactures and repairs instruments, optical equipment, projectors, and demonstration devices. Two Foucault Pendulums were fabricated for other non-profit institutions during the year. Booklets, catalogues, programs and maps were produced by the printshop, which is a division of the Instrument Shop. The staff was also involved with the planning, construction, and inspection of the new Junior Academy and Docent Office facilities.

WOOD SHOP. Bradley H. Buchanan, Superintendent. The wood shop manufactures custom furniture and cases for exhibits, undertakes remodeling problems in the research as well as the public areas, and provides services for all departments of the Academy.

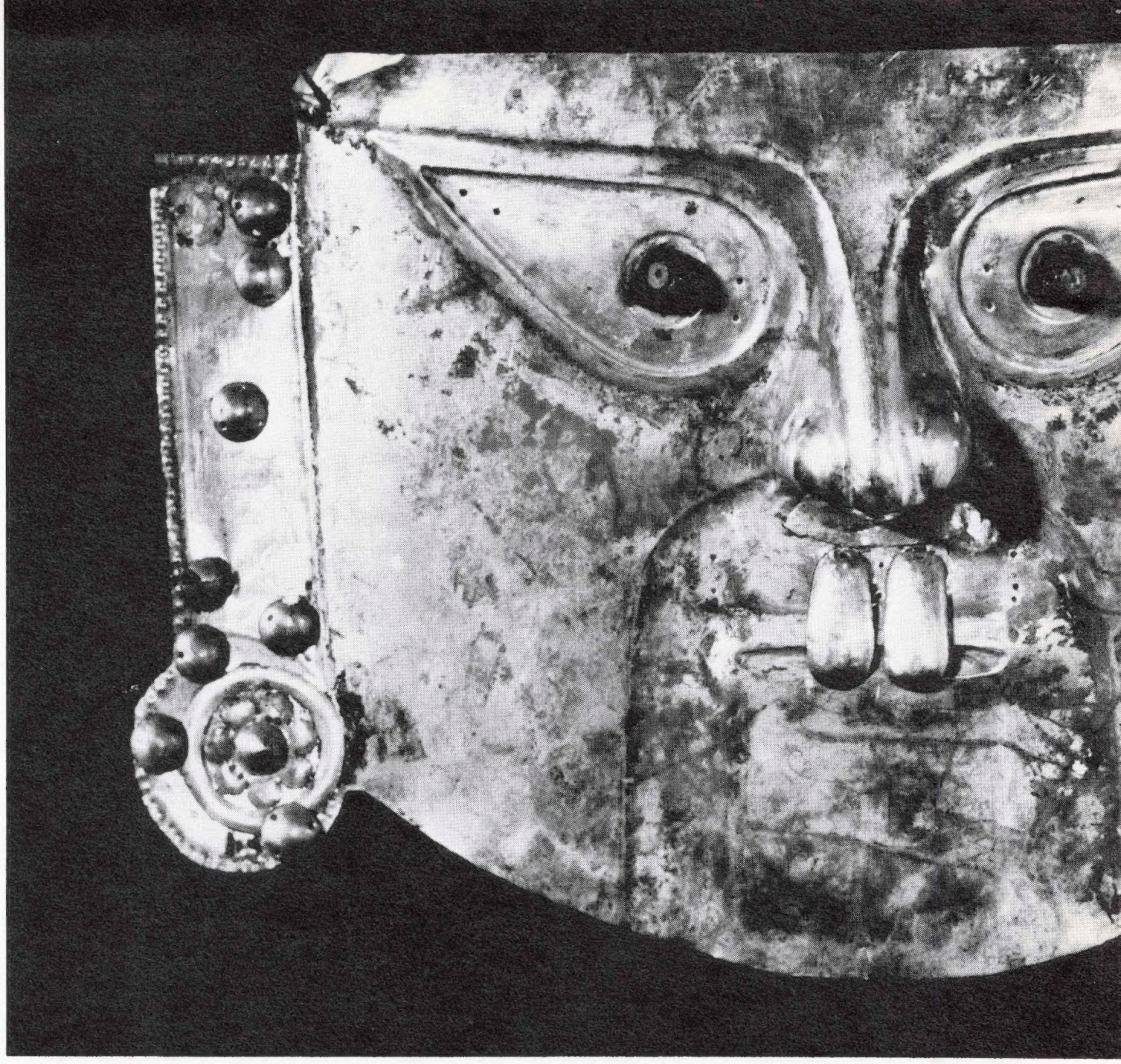
Right top and center, "Traditional Rice Culture of Japan" and "The Navigating Peoples of the Pacific" were two permanent exhibits completed in the Wattis Hall of Man. Right, "Man in Space . . . Our New Environment" told about what has happened in space exploration and what is expected for the future. Far right, the Living Arts Program, which had support from the National Endowment for the Arts, featured artists and artisans from far and near.

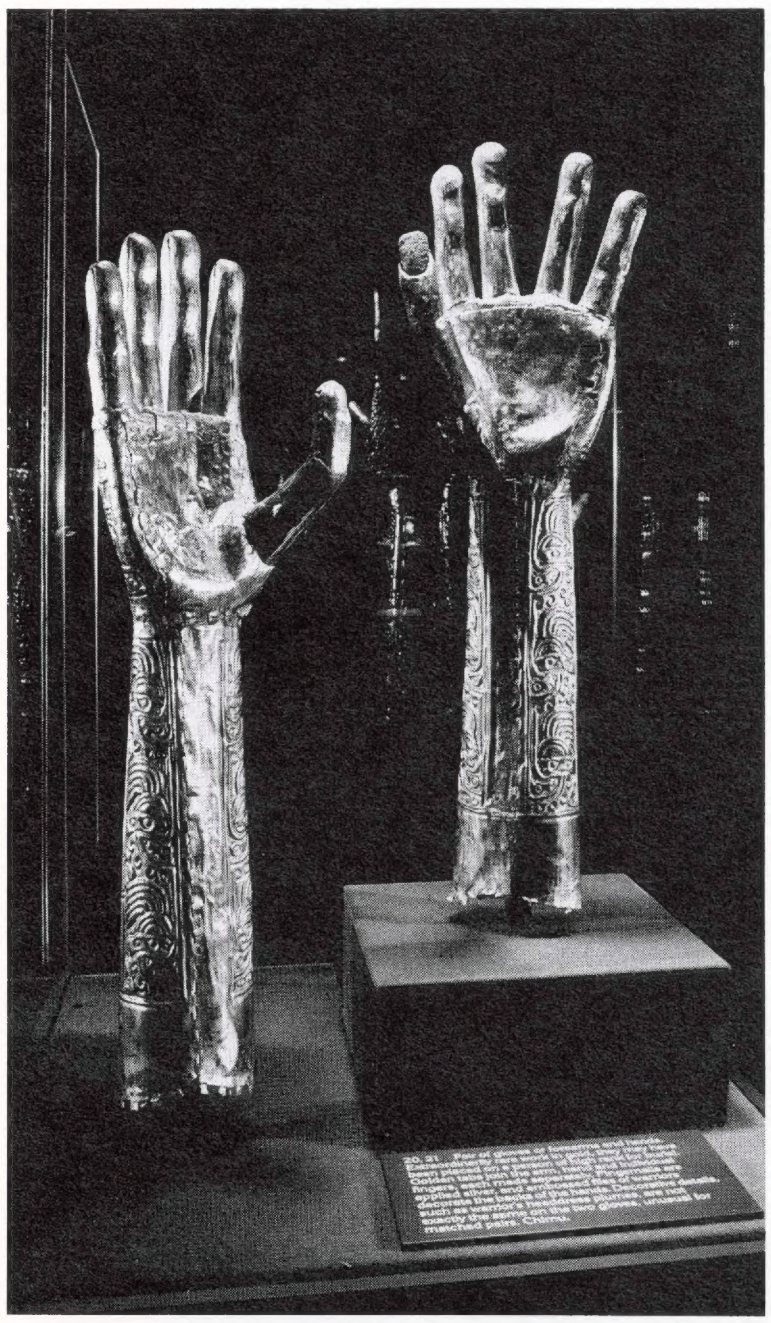
to replenish vital nutrients.
Wet-growing minimized
the need for crop rotation
because nitrogenous bacteria
flourish in still water,
constantly replenishing the soil.
Intensification is a process
capable of supporting
a rapidly expanding population.
When Commodore Perry visited in 1853
the Japanese population had grown to 35 million,
and rice had long been established
as the major food and tax crop.
The evolution of irrigation controls
and the subdivision of tasks
connected with growing, shipping and selling rice
led to characteristic stratification
within traditional Japanese society:
the aristocratic samurai, essential farmers,
respected craftsmen, and lowly merchants.
Shrines were built and maintained
in a style which reflected and honored
the rustic beginnings of the rice culture.
Colorful festivals
marked the seasonal onset of the rice cycle
as well as the end of the harvest period.
This exhibit explores the process
of intensive agriculture
and its relationship
to traditional Japanese society
at the end of the Tokugawa Period (16

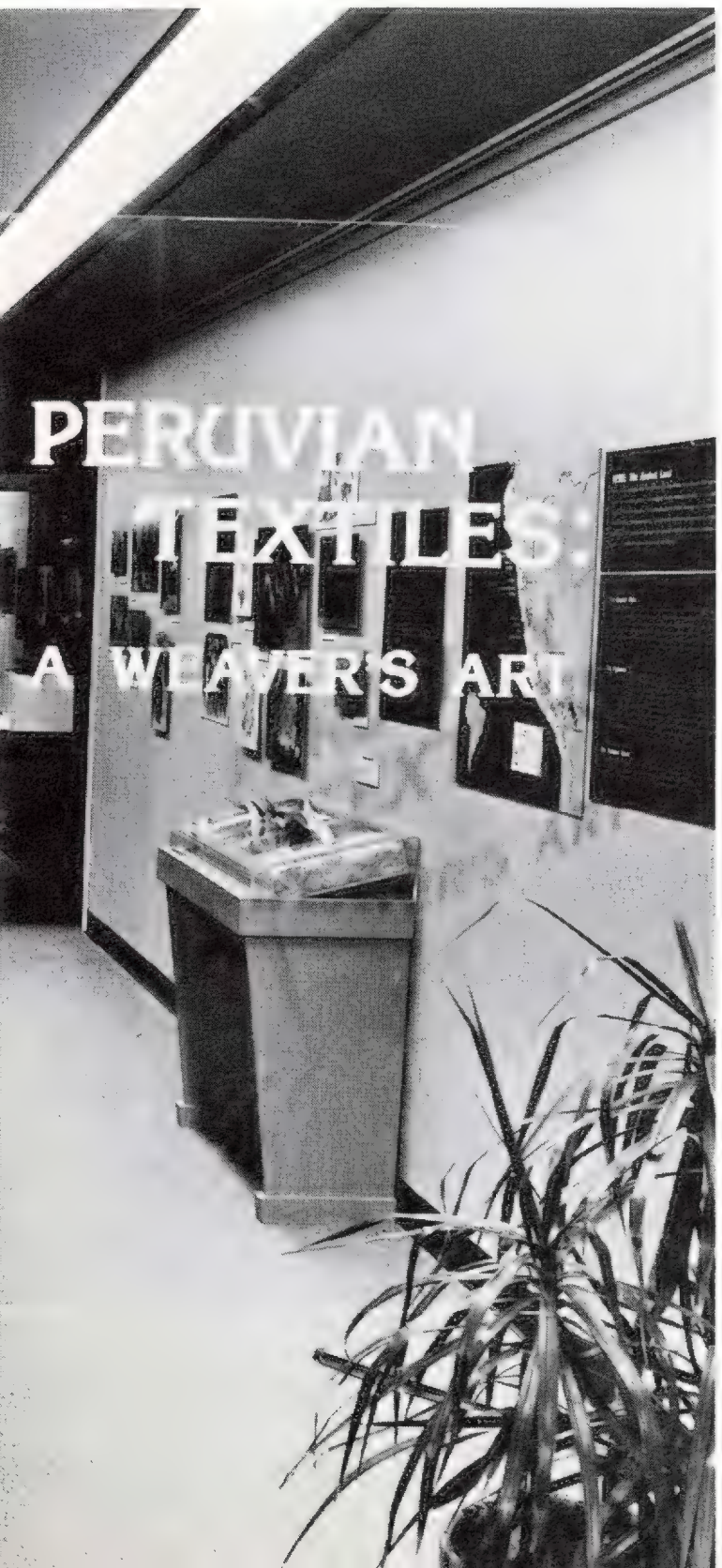
THE CENTRAL CAROLINE
ISLANDERS

MAN IN SPACE... OUR NEW ENVIRONMENT
SPACE SETTLEMENTS
SPACE SHUTTLE
SKYLAB
APOLLO
SPACE
SETTLEMENTS

Peru and the accomplishments of its ancient peoples were featured exhibitions in the summer of 1978. "Peru's Golden Treasures," which opened June 15, was supported by "Peruvian Textiles: A Weaver's Art." Right, Chimu mask of sheet gold. Below, Chimu burial gloves. Below right, the Peruvian textile show included ancient specimens from the Academy's Carl Rietz Collection and pieces presented by Mrs. Kenneth Bechtel.







RESEARCH ACTIVITIES

The investigation and interpretation of the natural and environmental sciences were the mission of the California Academy of Sciences when it was founded 125 years ago, and they remain so today. Interpretation includes the public functions of the institution; even more important is the investigative activity, the scientific research and maintenance of systematic collections which are the underlying obligations of natural history museums. Dr. William N. Eschmeyer is Director of Research for the Academy.

ANTHROPOLOGY DEPARTMENT. Joan Bacharach, Acting Chairman. The Anthropology Department has the support of the James Irvine Curatorial Chair of Anthropology Endowment.

During the year the Anthropology Department was deeply involved with the continued development of permanent exhibit features of the Wattis Hall of Man, temporary anthropological exhibits, and research on the materials in the permanent collection. Dr. William Torry went to northern Kenya for nine weeks to obtain artifacts used by the Gabra camel people. Nancy Bronstein conducted field work in Arizona and New Mexico in connection with the Navajo-Hopi Southwest Indian unit in Wattis Hall. Elayne Zorn worked with textiles of the Indians of the Peruvian Andes, in preparation for another permanent exhibit. Patricia Duff studied and accessioned a collection of 140 stone aboriginal grinding implements, including mortars, pestles, metates and manos donated by Mr. Elmer Gould of Salinas, California. Mr. Gould made this remarkable collection over a sixty year period, and it contains unique artifacts which will be used in a special exhibit.

A show of ancient Peruvian textiles from the Carl Rietz Collection was prepared for the Patricia Price Peterson Gallery. Eight museums borrowed artifacts from the Academy for their exhibitions.

The Anthropology Department benefited from the services of several interns from the University of California at Davis and Texas Tech University, as well as CETA staff members.

BOTANY DEPARTMENT. Dennis Breedlove, Chairman and Associate Curator. Approximately 17,500 specimens were added to the herbarium, which has about 1,377,500 specimens. Dr. Elizabeth McClintock retired July 31, 1977, completing 29 years of employment by the Academy. A nationwide search led to the selection of Dr. Frank Almeda, who came from the faculty of the University of California, Los Angeles to join the Academy as Associate Curator July 1, 1978.

The fourth year of a five-year National Science Foundation supported project of integrating the Dudley Herbarium from Stanford University with the Academy Herbarium was funded by a $33,000 grant. Dr. Alva Day, who is managing that project, estimates the work to be more than half finished.

Dr. Breedlove made a collecting trip to the southern portion of Baja California. He also worked on the ethnobotany of the Tzotzil Indians of Chiapas with Dr. Robert M. Laughlin of the Smithsonian Institution. During the year Dr. Breedlove distributed 18,117 duplicate specimens from his Flora of Chiapas studies to ten major herbaria in the United States and Mexico.

Dr. Sylvia Earle's ambitious field work included both collecting marine algae and studying the behavior of humpback whales, the latter in connection with her work as an internationally recognized marine conservationist. Dr. Earle traveled to Alaska, the Bahamas, Hawaii, Europe, New Zealand and Australia; gave more than fifteen lectures; and attended six international conferences. She wrote the introduction to and served as consultant for the National Geographic Society book *Ocean Realm*.

ENTOMOLOGY DEPARTMENT. Paul H. Arnaud, Jr., Chairman and Curator. The insect and arachnid collections contain approximately 6,526,930 processed specimens, 129,132 having been accessioned during the year. There are now 13,218 numbers assigned to the type collection, of which 259 primary types were accessioned during this report period. Loans of 72,201 specimens were made to 177 persons in 260 transactions and were sent to 17 foreign countries as well as to many locations throughout the United States.

The National Science Foundation provided $150,300 for the care and use of the entomological collections, of which $105,342 paid half the cost of a compactor storage system which will accommodate 29,344 drawers. The rest was for salaries of technical assistants and supplies. The compactor storage unit is expected to be completed before 1979, and all collections will again be available for study or loan.

A particularly important collection of 16,300 horse flies (Tabanidae) was received from Dr. Cornelius B. Philip. It

The Junior Academy occupied new quarters, right, which were completed in June, 1978. Above, young scientists in a Junior Academy class.

has representatives of more than 95% of the 300 Nearctic species and 50% of the 1,000 Neotropical species. There are 950 paratypes, which with 230 primary types previously presented and earlier holdings of representative species constitutes one of the world's leading research collections of Tabanidae.

Another noteworthy gift, from Mrs. Charlotte Reeves of Tujunga, California was the Robert T. Reeves collection of 7,814 butterflies which included 18 specimens of San Francisco's extinct Xerces blue (*Glaucopsyche xerces* Boisduval).

Important collections were also received from L. Neil Bell, Dennis Breedlove, Thomas W. Davies, Victor O. DeMasi, Hugh B. Leech, Andrew Moldenke, Edward S. Ross, J. W. Tilden, D. Dee Wilder and others.

Staff members continued their research on the evolution, zoogeography and systematics of various insect and arachnid groups. Some emphasis was given studies of the Baja California fauna. Much time, however, was required for the shifting of specimens required by the new storage system.

GEOLOGY DEPARTMENT. Peter U. Rodda, Chairman and Curator. There are 59,834 lots of fossil and Recent shells, 1,493 lots having been accessioned during the year. The type collection contains 3,454 primary and 7,501 paratypes. The integration of the Academy and Stanford University collections was underway. Specimens were received from H. A. Rehder, Antonio J. Ferreira, Mr. and Mrs. William D. Pitt, Calvin D. Randolph, Eugene V. Coan, George Mendenhall, Charles Baumbach and others.

The diatom collection, of which Research Associate Margaret Hanna is Honorary Curator, contains approximately 50,000 slides. A most important acquisition was the A. L. Brigger collection of 25,000 single-mount diatom slides and 4,000 bottles of prepared diatom samples. Robert Firth presented 50 diatom slides. In January the Department was host to a four-day Biostratigraphy Workshop attended by 19 North American diatomists.

The Mineral Collection has 10,143 specimens, 422 of which were donated during the year. Among the most noteworthy were 20 display-quality minerals from Mrs. Irene Alonso, a large Brazilian quartz and tourmaline specimen from the California Anti-Litter League, a specimen of Wyoming Trona given by the Stauffer Chemical Company, a large Kyanite from Brazil donated by George Mendenhall, specimens of Tridymite, Vuagnatite and Mcguinnessite from A. L. McGuinness, and a micromount specimen of the new mineral, Jonesite, from Francis T. Jones.

From November 12 to 20, 1977, a team of Italian geophysicists established a base station for the precise movement of absolute gravity in the department's laboratory. This is a cooperative effort with the International Union for Geodesy and Geophysics and the U.S. Air Force Geophysical Laboratory. The gravity station, one of six in the United States, will be used as a reference point for future gravity studies.

HERPETOLOGY DEPARTMENT. Alan E. Leviton, Chairman and Curator. During the fiscal year 3196 newly catalogued specimens were added to the research collections, which now contain about 228,000 specimens. The additions were mostly from areas other than North America, and included important collections donated by Paul Williams, Raymond Laurent, Leo G. Hoevers, John Gasperetti, Angel Alcala, Theodore Papenfuss and Robert Sieb.

Loans were made to 29 different institutions, ten of which were in foreign countries, in 64 transactions involving 2133 specimens.

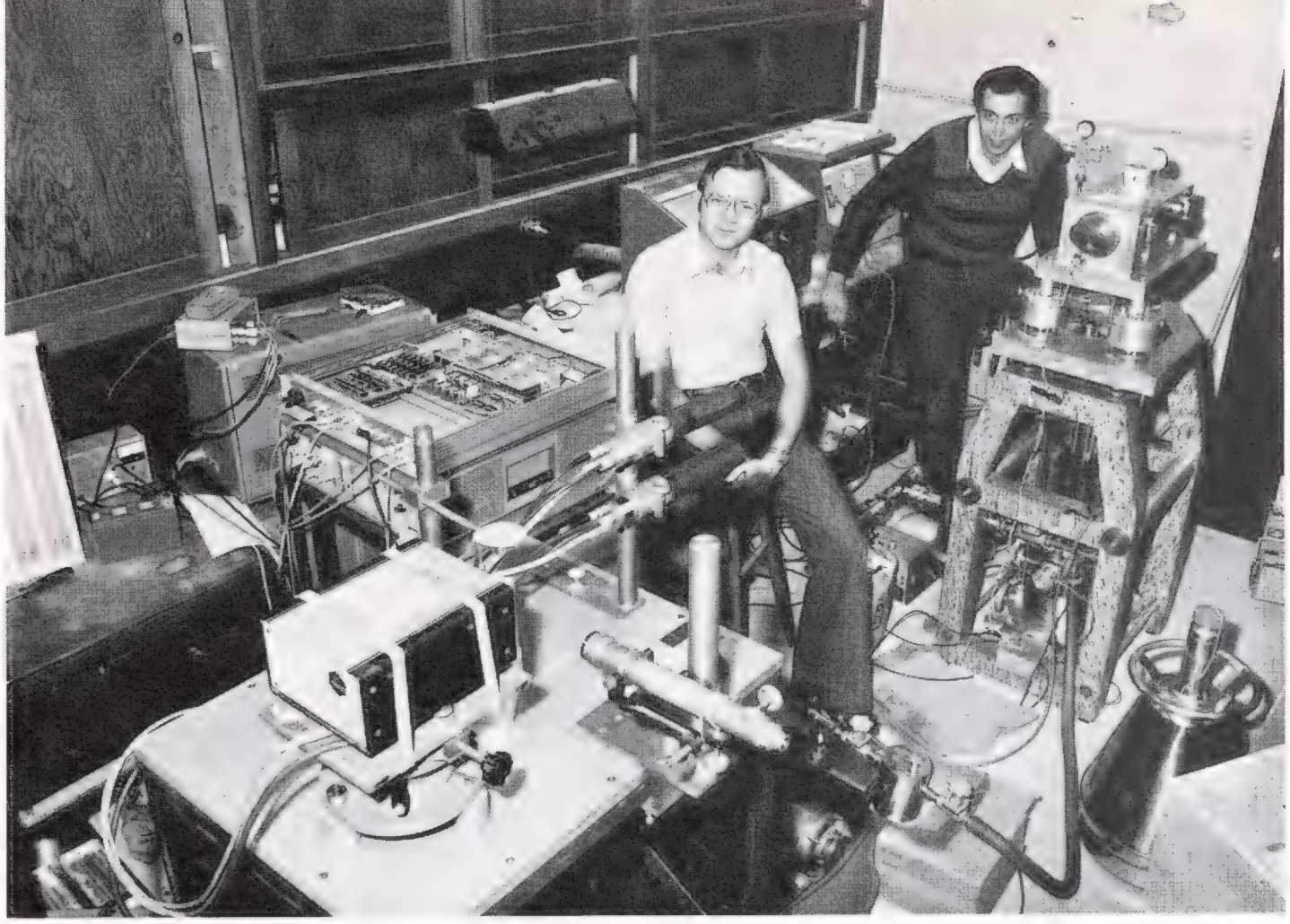
The National Science Foundation provided funds for the employment of John Simmons as collections manager and Peggie Phillips as curatorial assistant. Plans were completed for expansion of the department into new offices and laboratories in the area vacated by the Junior Academy. Part of the necessary renovation for the laboratory and visiting scientists' cubicles will be provided by the National Science Foundation.

Dr. Leviton serves as Secretary-Treasurer of the Pacific Division, American Association for the Advancement of Science, which has headquartered at the Academy for more than forty years.

ICHTHYOLOGY DEPARTMENT. William N. Eschmeyer, Chairman and Curator. The Ichthyology Collection contains about 175,000 bottles, or lots, including 4074 specimens in 755 lots which were added during the year. The department loaned 4382 specimens in 949 lots, in 97 transactions with 57 ichthyologists and graduate students. Two hundred visitors used the collection and facilities for research purposes.

The National Science Foundation continued its support of the department as one of the major collection centers for the field of ichthyology, and $55,700 was awarded for the year beginning 1 June 1978. Included were funds to equip an additional collection room.

A grant was received from the National Oceanic and Atmospheric Administration (NOAA) in the amount of $51,-247. The Academy will serve as the voucher specimen repository for all field collections and laboratory studies concerned with the Outer Continental Shelf Survey of Alaska. A grant from the Smithsonian Institution for use in India permitted Dr. Kaza V. Rama Rao of the Zoological Survey of India to work at the Academy for nearly five months. Dr Tyson Roberts received a grant from the National Science Foundation in the amount of $24,763 for the first year of a three-year study of a large collection of fishes he made in the Kapuas River in Indonesia, a tropical river of unusual zoogeographic interest.



Left, establishing the Academy's gravity station. Above, Australian Consul General Geoffrey V. Brady and Mrs. Brady with Director and Mrs. Lindsay at the opening of the "Art of the First Australians" exhibition.

Dr. Eschmeyer is Director of Research for the Academy, in addition to his other duties and responsibilities. Tomio Iwamoto, Associate Curator of Ichthyology, serves also as Editor of Scientific Publications.

INVERTEBRATE ZOOLOGY DEPARTMENT. Welton L. Lee, Chairman and Curator. A conservative estimate of the number of specimen lots now available in the invertebrate zoology collections is 96,000 lots. During this year there were significant additions from Australia and the South Pacific, northern South America, as well as other areas. A precise inventory and complete catalogue of the collections in this rather new and rapidly expanding department will require additional time and effort. Some progress was made on the significant Stanford University and Hopkins Marine Station collections, which were transferred to the Academy at a time prior to the implementation of standard archival procedures.

The San Francisco Bay Project, now in its fifth year, provides a central source of information about the invertebrate fauna of our Bay-Delta system. Manuals are nearing publication and the bibliography now cites more than 1,000 references. The reference collection of identified species vouchers is unique in scope and service utilization. The Bothin Helping Fund and the Hearst Foundation have provided support for this project.

A grant from the Leslie Salt Corporation sponsored a biological reconnaissance of selected sites in South San Francisco Bay and studies of their intertidal faunas.

Department staff members continued participation in research activities of the Oceanic Society's Farallon Research Group, which produced a report titled "Reconnaissance Survey of the Farallon Islands Area of Special Biological Significance" for the Department of Fish and Game.

Grants funded in 1977-1978 include $29,950 from the National Science Foundation for "Systematics of the Sea Anemone Family Stoichactidae" (for two years) for Dr. Daphne Dunn; the National Science Foundation and the Packard Foundation provided $76,532 for "Polychaetous Annelids of San Francisco Bay. Production of Identification Manuals" (for two years); the Hearst Foundation provided $5,000 and the Bothin Helping Fund gave $10,000 for the San Francisco Bay Bibliography; and the South Bay Dischargers provided $1,000 for their Voucher Collection. The National Oceanic and Atmospheric Administration support mentioned in the Ichthyology Department report also involves the Invertebrate Zoology Department.

There was continuing local field work in connection with the San Francisco Bay, Leslie Salt, and Farallon Island projects. Daphne Dunn traveled to Japan and to Indonesia and Malaysia in connection with her sea anemone studies, sponsored by the National Academy of Sciences, the National Geographic Society and the Indonesian National Institute of Oceanology.

ORNITHOLOGY AND MAMMALOGY DEPARTMENT. Laurence C. Binford, Chairman and Associate Curator. Department collections contained about 84,000 birds and 22,000 mammals, 435 birds and 81 mammals having been added during the year. Research Associate J. Dan Webster presented a collection of 67 birds and 13 mammals from his Alaskan work, and other noteworthy specimens were given by several friends and institutions. During the year 409 specimens were loaned.

The Department's area on the upper floor was expanded and the nest, egg, and Stanford bird collections were moved from a basement storeroom. Metal shelving was installed in the new area as well as the Marine Mammal Room. Senior Scientific Assistant Jacqueline Schonewald, with the aid of Research Associate John R. Arnold and numerous volunteers, completed cataloging the Stanford mammal collection. Mrs. Schonewald also organized a 40-member volunteer crew to assist in the salvage of marine mammals. Anthony James completed the curation of the collection of birds preserved in alcohol and the Barbara Jordan (Stanford) bird collection.

Dr. Binford finished a preliminary survey of hawk migration at Pt. Diablo, California, and continued work on long-term projects concerning the birds of Oaxaca, Mexico and Golden Gate Park. He also served as chairman of the Academy's Scientific Publications Committee.

Senior Scientist Robert T. Orr's research resulted in the publication of his book "The Little Known Pika" in September.

SCIENTIFIC PUBLICATIONS. Tomio Iwamoto, Editor. During the year 459 pages of scientific material were published, including 11 issues of the *Proceedings,* four *Occasional Papers,* and an index for Volume 40 of the *Proceedings* which was compiled by Lillian Dempster. Printing cost was $16,160, of which $7,366 was provided by authors. Mailing cost was $1,730.

Dr. Iwamoto edited seven additional manuscripts which were at the printer's when the year closed, and three additional manuscripts totaling about 300 pages have been accepted.

The Scientific Publications Committee members were Laurence C. Binford, Chairman, Paul H. Arnaud, Jr., William N. Eschmeyer and Tomio Iwamoto.

George E. Lindsay

George E. Lindsay
Director

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(as of June 30, 1978)

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CETA

The Academy's staff was augmented by about thirty persons who worked under the Comprehensive Employment and Training Act (CETA). These valuable employees served in research, maintenance, exhibition preparation and education departments.

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1977-1978

Many Academy programs, activities and services are augmented by volunteers who donate their time and services. We are most grateful to the following:

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Key to department abbreviations

Ad	Administration	*En*	Entomology	*Ic*	Ichthyology	*Li*	Library
An	Anthropology	*Ex*	Exhibits	*ID*	Information Desk	*OM*	Ornithology and Mammalogy
Aq	Aquarium	*Ge*	Geology	*IS*	Instrument Shop	*PC*	Picture Collection
Bo	Botany	*He*	Herpetology	*IZ*	Invertebrate Zoology	*PI*	Planetarium
Do	Docents						

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CALIFORNIA ACADEMY OF SCIENCES

STATEMENT OF CHANGES IN FUND BALANCES
YEAR ENDED JUNE 30, 1978

	Current funds				
	General operating	Restricted to research	Special purpose funds	Endowment fund	Building fund
Balance at beginning of year	$ 736	$677,447	$3,726,311	$2,577,731	$ 115,583
Additions:					
Operating income	1,882,655	—	—	—	—
Contributions, grants and appropriations for endowments and special purposes	298,052	321,559	2,356,952	72,550	12,185
Investment income	392,579	—	257,456	—	—
Laserium receipts	—	—	113,294	—	—
Gain on sale of securities	—	—	(16,828)	(10,734)	—
Other	—	34,329	147,043	—	—
Total additions	2,573,286	355,888	2,857,917	61,816	12,185
Deductions:					
Operating expenses	2,795,644	—	—	—	—
To finance expenditures of research grants	—	372,125	—	—	—
Indirect costs charged to research grants	—	60,487	—	—	—
Amounts expended for furniture, fixtures and equipment	—	327,898	151,695	23,511	—
Amounts expended for construction	—	—	3,062	—	219,480
Amounts expended for professional services	—	—	47,095	2,214	21,801
Exhibits	—	—	—	—	—
Other	—	8,547	472,364	539	4
Total deductions	2,795,644	769,057	674,216	26,264	241,285
Budgeted transfers between funds	221,286	—	(221,286)	—	—
Balance (deficit) at end of year	$ (336)	$264,278	$5,688,726	$2,613,283	$ (113,517)

See accompanying notes to financial statements.

CALIFORNIA ACADEMY OF SCIENCES

BALANCE SHEETS — JUNE 30, 1978

ASSETS	Current funds				
	General operating	Restricted to research	Special purpose funds	Endowment fund	Building fund
Cash:					
Commercial accounts	$ —	$ 16,335	$ 19,811	$ 2,092	$ 1,450
Savings accounts	—	—	151,743	85,933	—
	—	16,335	171,554	88,025	1,450
Receivables:					
Research grants (note 2)	—	270,854	—	—	—
Accrued interest and dividends receivable	20,704	—	43,283	—	—
Other	91,407	—	—	—	—
	112,111	270,854	43,283	—	—
Inventory of guidebooks, at cost	3,133	—	—	—	—
Prepaid expenses	34,297	—	—	—	—
Investments (note 3):					
Commercial property, including a fully depreciated building	—	—	—	608,084	—
Marketable securities	—	—	5,194,046	2,086,724	—
Due from other funds (including $1,765 from Dunaway Unitrust)	—	—	391,026	—	—
Buildings (note 4)	—	—	—	—	—
Collections, library and equipment (note 5)	—	—	—	—	—
Unamortized lease costs (amortized on the straight-line basis over 40 years)	4,227	—	—	—	—
Total assets	$153,768	$287,189	$5,799,909	$2,782,833	$ 1,450
LIABILITIES AND FUND BALANCES					
Liabilities:					
Accounts payable	85,439	14,806	49,558	—	—
Accrued expenses	17,941	—	—	—	—
Other liabilities	15,710	—	—	—	—
Due to other funds	35,014	8,105	61,625	169,550	114,967
Total liabilities	154,104	22,911	111,183	169,550	114,967
Fund balances:					
Current unrestricted, available for general operations	(336)	—	—	—	—
Current restricted, designated by donors for:					
Research grants	—	264,278	—	—	—
Special purposes	—	—	4,594,791	—	—
Irvine anthropology curatorial chair	—	—	546,903	—	—
Unexpended plant improvements	—	—	(29,065)	—	—
Current restricted, under board discretion	—	—	576,097	—	—
Endowment fund, under board discretion	—	—	—	2,613,283	—
Building fund	—	—	—	—	(113,517)
Fund balances	(336)	264,278	5,688,726	2,613,283	(113,517)
Total liabilities and fund balances	$153,768	$287,189	$5,799,909	$2,782,833	$ 1,450

CALIFORNIA ACADEMY OF SCIENCES

STATEMENT OF CURRENT FUNDS—GENERAL OPERATING REVENUES, EXPENSES, TRANSFERS AND FUND BALANCE

Year ended June 30, 1978 with comparative figures for 1977

	1978	1977
Revenues:		
Support from the public:		
Corporate contributions	$ 38,970	$ 42,670
Individuals, trusts and private foundations	90,779	61,453
Membership dues	168,303	144,472
Total support from the public	298,052	248,595
Operating income:		
City and County of San Francisco support of operations (note 8)	1,027,398	863,737
Fees and grants from others	60,487	47,607
Planetarium (including Laserium income of $42,000 in 1978 and $53,525 in 1977)	196,941	213,578
Admissions	424,661	398,786
Sales desk royalty	24,016	20,411
Restaurant royalty	93,742	80,041
Other	55,410	45,304
Total operating income	1,882,655	1,669,464
Investment income:		
Net rent from commercial building	266,016	205,629
Interest and dividends	126,563	125,887
Total investment income	392,579	331,516
Total revenues	2,573,286	2,249,575
Budgeted transfers from other funds	221,286	304,100
Total revenues and transfers	2,794,572	2,553,675
Expenses:		
Aquarium and museum	1,281,708	1,137,859
Departmeutal research and curatorial activity	593,020	561,197
Planetarium	126,933	101,045
General and administrative	743,760	689,461
Employees' pension annuity (note 6)	50,223	54,367
Total expenses	2,795,644	2,543,929
Excess of revenues and transfers (expenses) over expenses (revenues and transfers)	(1,072)	9,746
Fund balance (deficit) at beginning of year	736	(9,010)
Fund balance (deficit) at end of year	$ (336)	$ 736

See accompanying notes to financial statements.

ACCOUNTANTS' REPORT

The Board of Trustees
California Academy of Sciences:

We have examined the balance sheets of the funds of the California Academy of Sciences as of June 30, 1978 and the related statement of current funds—general operating revenues, expenses, transfers and fund balance and statement of changes in fund balances for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

Under generally accepted accounting principles, expenditures for furniture, fixtures and equipment should be capitalized. The California Academy of Sciences charges such purchases to current expenses, the effect of which is more fully described in note 9.

In our opinion, except as noted in the preceding paragraph, the aforementioned financial statements present fairly the financial position of the California Academy of Sciences at June 30, 1978 and the results of its operations for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

Peat, Marwick, Mitchell & Co.

Peat, Marwick, Mitchell & Co.
San Francisco, California
September 1, 1978

CALIFORNIA ACADEMY OF SCIENCES

NOTES TO FINANCIAL STATEMENTS

JUNE 30, 1978

1. Summary of Significant Accounting Policies

The Academy uses the accrual method of accounting with revenue recorded when earned and expenses recorded when incurred. Government grants are recognized in full when awarded. Gifts of specimens and collections are not included in the financial statements. Donated materials and services are not recorded.

The Academy has the following funds:

a. Current General Operating Fund—This fund accounts for resources used in carrying on the routine operations of the Academy in accordance with the limitations of its charter and bylaws. The governing board exercises discretionary control over this fund.

b. Restricted Funds:

1. The current "restricted to research" fund accounts for gifts and grants restricted to research projects. Certain of the general operating fund expenditures are also for research.

2. The special purpose funds account for resources contributed to the Academy for specific purposes, other than research projects. The resources are currently available for use, but expendable only for the purposes specified by the donors. Funds donated for plant improvements and the Irvine curatorial chair for anthropology are included in the special purpose fund category in the financial statements. Portions of the funds contributed for the use of various aquarium and museum departments may be designated by the Board of Trustees to general operations.

3. The building fund accounts for resources contributed specifically for the purpose of constructing projects such as the Fish Roundabout and the Wattis Hall of Man.

c. The endowment fund is comprised of unrestricted gifts and bequests. Unrestricted gifts in excess of $10,000 are credited to this fund. The principal amount of the gifts and bequests is not maintained intact in perpetuity. Transfers from the endowment fund and dispositions of its principal are made at the discretion of the governing board. The endowment investment income is credited, as earned, to the current general operating fund.

2. Research Grants Receivable

Grants receivable represent amounts pledged to the Academy for certain operations and for the completion of designated projects in future years. The grants will be collected as expenditures are made for the designated project. A summary of grants receivable follows:

National Science Foundation	$239,366
National Endowment of the Arts	6,644
Other	24,844
	$270,854

In addition, the Academy received contract orders from the National Oceanic and Atmospheric Administration of $51,247 and the U.S. Geological Survey of $10,565. Revenues from these contract orders will be recognized by the Academy as the work is performed.

3. Investments

Investments are recorded at cost, or if acquired by gift, at their fair market value at the date of acquisition. A summary of the current market value of the marketable securities for each fund follows:

	Book value	Market value
Special purpose fund	$5,194,046	$5,430,946
Endowment fund	$2,086,724	$1,910,513

The Academy owns an eleven story, fully depreciated office building located in the City of San Francisco. The value as recorded on the books of account represents the cost of the land.

4. Buildings

Under the terms of the Charter of the City and County of San Francisco, no one other than the City may hold title to buildings on City property. As the Academy facilities in Golden Gate Park are acquired, title is transferred to the City and County of San Francisco. The buildings were valued at $18,747,994 by independent appraisal in 1976.

5. Collections, Library and Equipment

Collections, library and equipment are expensed in the year of acquisition. The Academy staff has estimated the replacement cost of collections, library, and equipment to be in excess of $10,000,000.

6. Employees' Pension Annuity

On January 1, 1964, the Academy adopted a pension annuity plan for all regular full-time staff members under the age of 59 as of that date. On January 1, 1976, this plan was amended to comply with the Employee Retirement Income and Security Act of 1974.

Under the provisions of the plan, the Academy and the employees each fund one-half of the pension cost. The Academy's contributions are based on 5% of the amount of salary subject to Social Security tax and 7½% of the amount of salary above the Social Security tax base. Total pension expense for the year was $50,223. There is no past service liability, and it is the Academy's policy to fund current pension costs.

7. Trusts

The Academy is the ultimate beneficiary under an irrevocable living trust in the amount of $154,294 (market value $144,464). The income of the trust is paid to the grantors and the Academy bears the cost of all trust operations. The assets of the trust are not shown in the accompanying financial statements.

The Academy is the trustee and a fifty percent beneficiary under each of three irrevocable unitrust agreements which, together, had a market value at June 30, 1978 of $954,662. Each grantor receives an annual amount equal to six percent of the net fair market value of the assets of the respective unitrust. These trusts absorb the costs of their operations. The assets of the trust are not shown in the accompanying financial statements. Distributions under the unitrust agreements, for the fiscal year ended June 30, 1978 totaled $57,411.

8. Support from the City and County of San Francisco

Section 6.404d of the Charter of the City and County of San Francisco states that the City shall provide funds necessary for the maintenance of the Steinhart Aquarium and funds deemed proper for the maintenance of the Academy buildings. During the fiscal year ended June 30, 1978, the Academy received $1,027,398 from the City and County of San Francisco for this support.

In addition, the City provided Federal funds for the employment of seven janitors, eight museum guards, four staff aides, four curatorial aides, two account clerks, three clerk-typists, three aquarium assistants and two aquarium exhibit preparators. These 33 persons were assigned as a result of the Comprehensive Employment and Training Act of the Federal Government. The amount of these Federal funds, aggregating approximately $300,000, has not been included in the accompanying financial statements.

9. Furniture, Fixtures and Equipment

The Academy departs from generally accepted accounting principles in that it expenses such assets as acquired instead of capitalizing them and amortizing the costs over the useful lives thereof. During the year, the Academy acquired furniture, fixtures and equipment costing $503,104.

10. Income Taxes

The Academy is qualified as a tax-exempt organization under Section 501(c)(3) of the Internal Revenue Code and is not a private foundation. The Academy is also tax-exempt under the laws of the State of California.

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California Academy of Sciences

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On the cover:
Pinus longaeva, the Bristle Cone Pine,
the world's oldest living thing.
Photograph: Lloyd E. Ullberg